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THE JOURNAL OF PHILOSOPHY

NOTES ON EXISTENCE AND NECESSITY

THIS paper[1] concerns two points of philosophical controversy. One is the question of admission or exclusion of the modalities—necessity, possibility, and the rest—as operators attaching to statements. The other is the ontological question, "What *is* there?" It is my purpose here to set forth certain considerations, grounded in elementary logic and semantics, which—while not answering either question—must seriously condition any tenable answers.

The logical notions that prove crucial to these considerations are the notions of identity and quantification; and the semantical ones are the notions of designation and meaning, which are insufficiently distinguished in some of the current literature. A new semantical notion that makes its appearance here and plays a conspicuous part is that of the "purely designative occurrence" of a name.

1. DESIGNATION AND IDENTITY

One of the fundamental principles governing identity is that of *substitutivity*—or, as it might well be called, that of *indiscernibility of identicals*. It provides that, *given a true statement of identity, one of its two terms may be substituted for the other in any true statement and the result will be true.* It is easy to find cases contrary to this principle. For example, the statements:

(1) Giorgione = Barbarelli,

(2) Giorgione was so-called because of his size

are true; however, replacement of the name 'Giorgione' by the name 'Barbarelli' turns (2) into the falsehood:

Barbarelli was so-called because of his size.

Furthermore, the statements:

(3) Cicero = Tully,

(4) 'Cicero' contains six letters

are true, but replacement of the first name by the second turns (4)

[1] Mainly a translation, from the Portuguese, of portions of my forthcoming book *O sentido da nova lógica* (São Paulo, Brazil).

false. Yet the basis of the principle of substitutivity appears quite solid; whatever can be said about the person Cicero (or Giorgione) should be equally true of the person Tully (or Barbarelli), this being the same person.

In the case of (4), this paradox resolves itself immediately. The fact is that (4) is not a statement about the person Cicero, but simply about the word 'Cicero.' The principle of substitutivity should not be extended to contexts in which the name to be supplanted occurs without referring simply to the object.

The relation of name to the object whose name it is, is called *designation;* the name 'Cicero' designates the man Cicero. An occurrence of the name in which the name refers simply to the object designated, I shall call *purely designative.* Failure of substitutivity reveals merely that the occurrence to be supplanted is not purely designative, and that the statement depends not only upon the object but on the form of the name. For it is clear that whatever can be affirmed about the *object* remains true when we refer to the object by any other name.

An expression which consists of another expression between single quotes constitutes a name of that other expression; and it is clear in general that the occurrence of that other expression or any part of it, within the context of quotes, is not designative. In particular the occurrence of the personal name within the context of quotes in (4) is not designative, nor subject to the substitutivity principle. The personal name occurs there merely as a fragment of a longer name which contains, beside this fragment, the two quotation marks. To make a substitution upon a personal name, within such a context, would be no more justifiable than to make a substitution upon the term 'cat' within the context 'cattle'.

The example (2) is a little more subtle, for it is a statement about a man and not merely about his name. It was the man, not his name, that was called so and so because of his size. Nevertheless, the failure of substitutivity shows that the occurrence of the personal name in (2) is not *purely* designative. It is easy in fact to translate (2) into another statement which contains two occurrences of the name, one purely designative and the other not:

(5) Giorgione was called 'Giorgione' because of his size.

The first occurrence is purely designative. Substitution on the basis of (1) converts (5) into another statement equally true:

Barbarelli was called 'Giorgione' because of his size.

The second occurrence of the personal name is no more designative than any other occurrence within a context of quotes.

To get an example of another common type of statement in which names do not occur designatively, consider any person who is called Philip and satisfies the condition:

(6) Philip is unaware that Tully denounced Catiline,

or perhaps the condition:

(7) Philip believes that Tegucigalpa is in Nicaragua.

Substitution on the basis of (3) transforms (6) into the statement:

(8) Philip is unaware that Cicero denounced Catiline,

no doubt false. Substitution on the basis of the true identity:

Tegucigalpa = Capital of Honduras

transforms the truth (7) likewise into the falsehood:

(9) Philip believes that the capital of Honduras is in Nicaragua.

We see, therefore, that the occurrences of the names 'Tully' and 'Tegucigalpa' in (6)–(7) are not purely designative.

In this there is a fundamental contrast between (6), or (7), and:

Crassus heard Tully denounce Catiline.

This statement affirms a relation between three persons, and the persons remain so related independently of the names applied to them. But (6) can not be considered simply as affirming a relation between three persons, nor (7) a relation between person, city, and country—at least, not so long as we interpret our words in such a way as to admit (6) and (7) as true and (8) and (9) as false.

Some readers may wish to construe unawareness and belief as relations between persons and statements, thus writing (6) and (7) in the manner:

Philip is unaware of 'Tully denounced Catiline',

Philip believes 'Tegucigalpa is in Nicaragua',

the purpose being to put within a context of single quotes every not purely designative occurrence of a name. It is not necessary, however, to force an analogy thus between cases of the type (6)–(7) and those of the type (4)–(5). It is unnecessary to insist that every indesignative occurrence of a name form part of the name of an expression. What is important is to insist that the contexts 'is unaware that . . .' and 'believes that . . .' are, like the context of single quotes, contexts in which names do not occur purely designatively. The same is true of the contexts 'knows that . . .', 'says that . . .', 'doubts that . . .', 'is surprised that . . .', etc.

2. Designation and Quantification

We have observed a basic connection between designation and identity. We have next to examine a connection, equally basic, between designation and existence—existence as expressed in the prefix '$\exists x$' of existential quantification in logic.

It must be noted carefully, to begin with, that this prefix has the very broad sense 'there is something x such that', and does not connote existence in any peculiarly spatial or temporal sense. The statement:

$$\exists x(x \text{ is a fish} \cdot x \text{ flies})$$

does affirm the existence of something in space and time, but only because fishes and things that fly are always in space and time, and not because of any spatial sense of '$\exists x$'. The prefix is no less suited to the context:

$$\exists x(x \text{ is a prime number} \cdot x \text{ is between 5 and 11}).^{2}$$

The intimate connection between designation and existential quantification is implicit in the operation of *existential generalization* —the operation whereby, from 'Socrates is mortal', we infer '$\exists x(x$ is mortal)', i.e., 'Something is mortal'. The idea behind such inference is that whatever is true of the object designated by a given substantive is true of something; and clearly the inference loses its justification when the substantive in question does not happen to designate. From:

There is no such thing as Pegasus,

for example, we do not infer:

$$\exists x(\text{there is no such thing as } x),$$

i.e., 'There is something which there is no such thing as', or 'There is something which there is not'.

Inference by existential generalization is of course equally unwarranted in the case of an indesignative occurrence of any substantive, whether of 'Pegasus' (which never occurs designatively) or of 'Giorgione', 'Cicero', 'Tegucigalpa', etc. (which often do occur designatively). Let us see what in fact happens in some of

[2] The special emphasis put by philosophers on the distinction between existence as applied to spatio-temporal objects and existence (or subsistence or being) as applied to abstract objects, or universals, is partly prompted by an idea that the methods of knowing existence in the two cases are basically different. But this idea, according to which the observation of nature is relevant only to determining the existence of spatio-temporal particulars and never the being of universals, is readily refuted by counter-instances such as that of "hyperendemic fever" in my paper "Designation and Existence," this Journal, Vol. XXXVI (1939), p. 703.

these further cases. From (2), existential generalization would lead to:

$$\exists x(x \text{ was so-called because of its size}),$$

i.e., 'Something was so-called because of its size'. This is clearly meaningless, there being no longer any suitable antecedent for 'so-called'. Note, in contrast, that existential generalization with respect to the purely designative occurrence in (5) yields the sound conclusion:

$$\exists x(x \text{ was called 'Giorgione' because of its size}),$$

i.e., 'Something was called 'Giorgione' because of its size'.

Applied to the occurrence of the personal name in (4), existential generalization would lead us to:

(10) $$\exists x(\text{'}x\text{' contains six letters}),$$

i.e.:

(11) There is something such that 'it' contains six letters,

or perhaps:

(12) 'Something' contains six letters.

Any expression formed by single quotes is a name of the expression within the quotes. In particular, thus, the expression:

$$\text{'}x\text{' contains six letters}$$

means simply:

The 24th letter of the alphabet contains six letters.

In (10) the occurrence of the letter within the context of quotes is as irrelevant to the quantifier that precedes it as is the occurrence of the same letter in the context 'six'. (10) consists merely of a falsehood preceded by an irrelevant quantifier. (11) is similar; its part:

'it' contains six letters

is false, and the prefix 'there is something such that' is irrelevant. (12), again, is false—if by 'contains six' we mean 'contains exactly six'.

It is less obvious, and correspondingly more important to recognize, that existential generalization is unwarranted likewise in the case of (6) and (7). Applied to (6), it leads to:

$$\exists x(\text{Philip is unaware that } x \text{ denounced Catiline}),$$

i.e.:

(13) Something is such that Philip is unaware that it denounced Catiline.

What is this object, that denounced Catiline without Philip yet having become aware of the fact? Tully, i.e., Cicero? But to suppose this would conflict with the fact that (8) is false.

Note that (13) is not to be confused with:

Philip is unaware that $\exists x(x$ denounced Catiline),

which, though it happens to be false, is quite straightforward and in no danger of being inferred by existential generalization from (6).

The logical operation of *application* is that whereby we infer from 'Everything is itself', for example, or in symbols '$(x)(x = x)$', the conclusion that Socrates = Socrates. This and existential generalization are in fact two aspects of a single principle; for instead of saying that '$(x)(x = x)$' implies 'Socrates = Socrates', we could as well say that the denial 'Socrates ≠ Socrates' implies '$\exists x(x \neq x)$'. The principle embodied in these two operations is the link between quantifications and the singular statements that are related to them as instances. Yet it is a "principle" only by courtesy. It holds only in the case where a substantive designates, and, furthermore, occurs designatively. It is simply the logical content of the idea that a given occurrence is designative.[3]

The ontology which one accepts, or which a given context presupposes, is not revealed by an examination of mere vocabulary; for we know that substantives can be used indesignatively without depriving them of meaning. Use of the word 'Pegasus' does not imply acceptance of Pegasus, nor does the mere use of the signs '9' or '9^{9}' imply that there are abstract objects, numbers, such as 9 and 9^{9}. It is not the mere use of a substantive, but its designative use, that commits us to the acceptance of an object designated by the substantive.

In order to determine whether a substantive is used designatively in a given context we have to look beyond the substantive and observe the behavior of the pronouns. Ways of using the substantive that do commit one to recognition of the object are embodied in the operations of existential generalization and application. The ontology to which one's use of language commits him comprises simply the objects that he treats as falling with the subject-matter of his quantifiers—within the range of values of his variables.

[3] The principle is, for this reason, anomalous as an adjunct to the purely logical theory of quantification. Hence the theoretical importance of the fact that all substantives, except the variables that serve as pronouns in connection with quantifiers, are dispensable and eliminable by paraphrase. See my *Mathematical Logic*, §27. Such elimination of names does not, of course, eliminate any objects; but the contact between language and object comes to be concentrated in the variable, or pronoun.

3. Meaning and Necessity

To say that two names designate the same object is not to say that they are *synonymous*, that is, that they have the same meaning. To determine the synonymity of two names or other expressions it should be sufficient to understand the expressions; but to determine that two names designate the same object, it is commonly necessary to investigate the world. The names 'Evening Star' and 'Morning Star', for example, are not synonymous, having been applied each to a certain ball of matter according to a different criterion. But it appears from astronomical investigations that it is the same ball, the same planet, in both cases; that is, the names designate the same thing. The identity:

(14) Evening Star = Morning Star

is a truth of astronomy, not following merely from the meanings of the words.

It results equally from astronomical researches, and not merely from the meanings of the words, that the object (the number, or degree of multiplicity) designated by the numeral '9' is the same as that designated by the complex name 'the number of planets'. The identity:

(15) The number of planets = 9

is a truth (so far as we know at the moment) of astronomy. The names the 'number of planets' and '9' are not synonymous; they do not have the same meaning. This fact is emphasized by the possibility, ever present, that (15) be refuted by the discovery of another planet.

Another contrast between designation and meaning is that only certain very definite expressions designate (viz., the names of the objects designated), whereas perhaps all words and other more complex unities capable of figuring in statements have meaning. In particular, substantives such as 'Pegasus' that fail to designate are not without meaning; in fact, it is only with an eye to the meaning of 'Pegasus' that we are able to conclude from a study of zoology that the word does not designate.

It is confusion of meaning and designation that gives rise to the quandary: "If there is no such thing as Pegasus, then there is nothing for 'Pegasus' to mean; but then this word and its contexts, even the context 'Pegasus does not exist', are meaningless." This quandary and its like no doubt have constituted a main motive for admitting, in addition to abstract objects and in addition to the concrete objects in space and time, certain further concrete objects

which are more or less like the ones in space and time but are merely possible, not actual. Pegasus is admitted as an object, in this widened domain of concrete objects, but one which lacks merely the special property of actuality. It should be apparent, though, that this extravagant multiplication of entities is a very temporary palliative, for in place of 'Pegasus' we can pick an example not accommodated even by the realm of possible objects—say 'the spinster wife of Pegasus'.

Just what the *meaning* of an expression is—what kind of object—is not yet clear; but it is clear that, given a notion of meaning, we can explain the notion of *synonymity* easily as the relation between expressions that have the same meaning. Conversely also, given the relation of synonymity, it would be easy to derive the notion of meaning in the following way: the meaning of an expression is the class of all the expressions synonymous with it. No doubt this second direction of construction is the more promising one. The relation of synonymity, in turn, calls for a definition or a criterion in psychological and linguistic terms. Such a definition, which up to the present has perhaps never even been sketched, would be a fundamental contribution at once to philology and philosophy.

The relation of synonymity is presupposed, as we have seen, in the notion of meaning, which is used so abundantly in every-day discourse. The notion of synonymity figures implicitly also whenever we use the method of indirect quotations. In indirect quotation we do not insist on a literal repetition of the words of the person quoted, but we insist on a *synonymous* sentence; we require reproduction of the *meaning*. Such synonymity differs even from logical equivalence; and exactly what it is remains unspecified.

The relation of synonymity is presupposed also in the notion, so current in philosophical circles since Kant, of *analytic* statements. It is usual to describe an analytic statement as a statement that is true by virtue of the *meanings* of the words; or as a statement that follows logically from the meanings of the words. Given the notion of synonymity, given also the general notion of truth, and given finally the notion of logical form (perhaps by an enumeration of the logical vocabulary), we can define an analytic statement as any statement which, by putting synonyms for synonyms, is convertible into an instance of a logical form all of whose instances are true. For example, Professor Stevenson's favorite analytic statement, 'No spinster is married', is converted into an instance of the form 'No A not B is B' by putting 'woman not married' for its synonym 'spinster'; and this form 'No A not B is B', which is logical in the sense of preserving only words of the logical vocabulary ('no', 'not', 'is'), is a form all of whose instances are true.

Among the various possible senses of the vague adverb 'necessarily', we can single out one—the sense of *analytic* necessity—according to the following criterion: the result of applying 'necessarily' to a statement is true if, and only if, the original statement is analytic.

(16) Necessarily no spinster is married,

for example, is equivalent to:

(17) 'No spinster is married' is analytic,

and is therefore true. The statement:

(18) 9 is necessarily greater than 7

is equivalent to

(19) '9 > 7' is analytic

and is therefore true (if we recognize the reducibility of arithmetic to logic). The statement:

(20) Necessarily, if there is life on the Evening Star then there is life on the Evening Star

is equivalent to:

(21) 'If there is life on the Evening Star, then there is life on the Evening Star' is analytic

(or, as we could also formulate it:

(22) 'There is life on the Evening Star' implies itself analytically,

if we explain a statement as implying another analytically when the conditional formed from the respective statement is analytic). (20) is then true, since the conditional in question is logically true and therefore analytic.

On the other hand the statements:

(23) The number of planets is necessarily greater than 7,

(24) Necessarily, if there is life on the Evening Star then there is life on the Morning Star

are false, since the statements:

The number of planets is greater than 7,

If there is life on the Evening Star, then there is life on the Morning Star

are true only because of circumstances outside logic.

The prefixes 'possibly' and 'it is impossible that' are definable immediately on the basis of 'necessarily' in the fashion 'not necessarily not' and 'necessarily not'. Thus, for example, (16) can be paraphrased in the manner:

(25) It is impossible that some spinsters be married.

4. Non-Truth-Functional Composition of Statements

The statements (17), (19), (21), and (22) are explicitly statements about statements. They attribute the property of analyticity or the relation of analytic implication to statements, referring to statements by use of their names (constructed with single quotes). On the other hand, (16), (18), (20), and (25) do not refer to other statements by use of their names; they are rather compounds of the statements themselves. The prefixes 'necessarily' and 'it is impossible that' are applied, like the sign of denial, to statements to form others.

The contrast between 'necessarily' and 'is analytic' is exactly analogous to the contrast between '$\sim$' and 'is false'. To write the denial sign before the statement itself in the manner:

$$\sim 9 < 7$$

means the same as to write the words 'is false' after the name of the statement, in the manner:

'$9 < 7$' is false.

In the example (20) we can recognize a complex connective, 'necessarily, if-then'. This connective, like 'if-then' or the dot of conjunction, joins statements to form others.

There is nevertheless a striking difference between the compounds reducible to conjunction and denial on the one hand and the compounds (16), (18), (20), and (25) on the other. These latter are *intensional* compounds, in the sense that the truth-value of the compound is not determined merely by the truth-value of the components.

The statements (17), (19), (21), and (22), besides containing names of statements, are also literally *compounds* of these same statements, the quotation marks being part of an expression applied to the component statement to form the compound. Just as the statements '$\sim 9 > 7$' and (18) are formed from the component statement '$9 > 7$' by the application of '$\sim$' and 'necessarily', we may consider that (19) is formed from the same component by application of two quotation marks and the words 'is analytic'. Similarly for (17), (21), and (22).[4]

[4] Cf. E. V. Huntington, "Note on a recent set of postulates," *Journal of Symbolic Logic*, Vol. 4 (1939), pp. 10–14.

The way in which such statements occur in the "compounds" (17), (19), (21), and (22) is, indeed, rather irregular and accidental. In general, we know that all matter within a context of single quotes is isolated, in an important sense, from the broader context. We know that a name within a context of single quotes does not occur designatively, and that a pronoun within such a context does not succeed in referring to a quantifier anterior to the quotes.

It is in the supposed freedom from these defects that the intensional composition of statements by means of 'necessarily', 'possibly', and 'necessarily if-then', like extensional composition by means of '$\sim$' and '$\cdot$', is thought to constitute composition of statements in a more genuine sense than that which puts the component within quotes. The prefixes 'necessarily' and 'possibly' aspire to such uses as:

If an object necessarily has one or other of two attributes,
then it is not possible that it lack both attributes,

that is:

$(x)(y)(z) \sim (y$ and z are attributes $\cdot$ necessarily
x has y or $z \cdot$ possibly x lacks y and $z)$,

in which a pronoun within the context 'necessarily . . .' or 'possibly . . .' refers beyond that context.

However, the cited modes of intensional composition of statements are, in fact, subject to the same defects as the context of quotes. For, in view of the fact that a substitution on the basis of the true identity (14) transforms the truth (20) into the falsehood (24), we have to conclude that the terminal occurrence of the name 'Evening Star' in (20) is not purely designative. Equally, in view of the fact that a substitution on the basis of the true identity (15) transforms the truth (18) into the falsehood (23) we conclude that the occurrence of the name '9' in (18) is not purely designative.

It follows that the context 'necessarily . . .', at least in the analytic sense which we are considering, is similar to the context of single quotes and to the contexts 'is unaware that . . .', 'believes that . . .', etc. It does not admit pronouns which refer to quantifiers anterior to the context.[5]

The expression:

$$\text{Necessarily} \sim (x) \sim x > 7,$$

that is, 'Necessarily something is greater than 7', still makes sense, being in fact a true statement; but the expression:

$$\sim (x) \sim x \text{ is necessarily greater than } 7,$$

[5] These circumstances must be carefully considered in any appraisal of a calculus of necessity such, for example, as that of C. I. Lewis.

that is, 'There is something which is necessarily greater than 7', is meaningless. For, would 9, that is, the number of planets, be one of the numbers necessarily greater than 7? But such an affirmation would be at once true in the form (18) and false in the form (23). Similar observations apply to the use of pronouns in connection with the example (20). This resistance to quantification, observed in relation to the context 'necessarily . . .', is encountered equally in connection with the derivative contexts 'possibly . . .' etc.

We see, therefore, that the apparent compounds (16), (18), (20), and (25) are compounds of the contained statements only in the irregular or accidental sense noted in the case of contexts which use quotes. It would be clearer, perhaps, to adhere explicitly to the forms (17), (19), (21), and (22), instead of the alternative forms (16), (18), (20), and (25). These observations apply, naturally, to the prefix 'necessarily' only in the explained sense of analytic necessity; and correspondingly for possibility, impossibility, and the necessary conditional. As for other notions of necessity, possibility, etc., for example, notions of physical necessity or possibility, the first problem would be to formulate the notions clearly and exactly. Afterwards we could investigate whether such notions involve non-designative occurrences of names and hence resist the introduction of pronouns and exterior quantifiers. This question concerns intimately the practical use of language. It concerns, for example, the use of the contrary-to-fact conditional within a quantification; for it is reasonable to suppose that the contrary-to-fact conditional reduces to the form 'necessarily, if p and q' in some sense of necessity. Upon the contrary-to-fact conditional depends in turn, for example, this definition of solubility in water: To say that an object is soluble in water is to say that it would dissolve if it were in water. In discussions of physics, naturally, we need quantifications containing the clause 'x is soluble in water', or the equivalent in words; but, according to the definition suggested, we should then have to admit within quantifications the expression 'if x were in water then x would dissolve', that is, 'necessarily if x is in water then x dissolves'. Yet we do not know whether there is a suitable sense of "necessity" that admits pronouns referring thus to exterior quantifiers.[6]

The effect of these considerations is rather to raise questions than to answer them. The one important result is the recognition that any intensional mode of statement composition, whether based on some notion of "necessity" or, for example, on a notion of

[6] For a theory of "disposition terms," like 'soluble,' see Rudolf Carnap, "Testability and Meaning," *Philosophy of Science*, Vol. 3 (1936), pp. 419–471; Vol. 4 (1937), pp. 1–40.

"probability" (as in Reichenbach's system), must be carefully examined in relation to its susceptibility to quantification. Perhaps the only useful modes of statement composition susceptible to quantification are the extensional ones, reducible to '$\sim$' and '$\cdot$'. Up to now there is no clear example to the contrary. It is known, in particular, that no intensional mode of statement composition is needed in mathematics.

5. Attributes and Classes

The use of general terms, like 'man' or 'blue', or of abstract terms, like 'justice' or '9', does not commit us to recognizing the existence of abstract objects. As is already clear, the question of our ontological presuppositions rests rather on our designative use of such terms, and depends finally on our manner of using pronouns and quantifiers. In fact, the question of ontological presuppositions reduces completely to the question of the domain of objects covered by the quantifier.

It turns out, nevertheless, that mathematics depends on the recognition of abstract objects—such as numbers, functions, relations, classes, attributes. The abstract objects upon whose recognition mathematics depends are, in fact, reducible to a part which includes only classes or attributes.[7] But abstract objects, these or others, have to be admitted in the domain of the quantifier.

The nominalist, admitting only concrete objects, must either regard classical mathematics as discredited, or, at best, consider it a machine which is useful despite the fact that it uses ideograms of the form of statements which involve a fictitious ontology. However, anyone who cares to explore the foundations of mathematics must, whatever his private ontological dogma, begin with a provisional tolerance of classes or attributes. But what is the difference between classes and attributes? It is common to speak of a class as a "mere aggregate", and to imagine it as having its members inside it, according to a spatial analogy; whereas an attribute tends to be imagined rather on the analogy of a power that inheres in the object that has the attribute, or as a feature that the object exhibits. This appeal to opposing analogies is pointless. Classes are as abstract and non-spatial as attributes, as I have emphasized elsewhere,[8] and there is no difference between classes and attributes beyond perhaps this: classes are the same when their members are the same, whereas attributes may be regarded as distinct even though possessed by the same objects.

The opinion is sometimes held that the idea of attribute (or property) is more intuitive than that of class, and that the idea of

[7] Cf. by *Mathematical Logic*, Chapters III–VI.

[8] *Op. cit.*, p. 120.

class should be derived from that of attribute. The derivation presents little difficulty,[9] but the idea that such a derivation is desirable is very curious. It rests perhaps on a confusion between attribute and *matrix*, this latter being an expression which has the form of a statement but contains a free variable. Certainly, in order to specify a class we usually have to present a matrix that is satisfied by the members of the class and by them only; but in this respect classes and attributes are alike, for the determination of an attribute also depends, usually, on presenting a matrix satisfied by the objects, and only those that have the attribute. The matrix is not the attribute.

Classes, being abstract objects, are less clear and familiar than we might wish, but attributes are even more obscure; for the only difference between classes and attributes resides, as we have seen, in the condition of identity, and in this respect classes are much clearer than attributes. Two matrices determine the same class when satisfied by the same objects; but under what condition do the matrices determine the same attribute?

Usually no criterion is offered. The only one I know is the following: matrices determine the same attributes if, and only if, they are logically equivalent. But this criterion leads to awkward results. Consider the attributes determined by the respective matrices:

(26) $x >$ number of planets,

(27) $x > 9$;

that is, the attribute of exceeding the number of planets and the attribute of exceeding 9. Since (26) and (27) are not logically equivalent, it follows that the attributes will not be identical. The statement:

(28) The attribute of exceeding the number of planets = the attribute of exceeding 9

is false. Still, substitution in the true statement:

The attribute of exceeding 9 = the attribute of exceeding 9

on the basis of (15) leads to (28). We have to conclude that the occurrence of '9' in the context 'the attribute of exceeding 9' is not purely designative. Likewise, more generally, we must conclude that the occurrences of names within names of attributes are not designative. Expressions of the type that specify attributes are not contexts accessible to pronouns referring to anterior quantifiers.

[9] Cf. Whitehead and Russell, *Principia Mathematica*, vol. 1, *20; also my essay "Whitehead and the rise of modern logic," in *The Philosophy of A. N. Whitehead* (Library of Living Philosophers, 1941), pp. 147 f.

Clearly this constitutes a fundamental restriction on the use of attributes. It is, in particular, a restriction which makes attributes inadequate to the ends of mathematics and inadequate even as a basis for the subsequent introduction of classes. The only recourse would be to adopt another standard for identity of attributes not based on logical equivalence. But what might such an alternative standard be? And would attributes so construed still be as intuitive as classes?

There may still be a reason to maintain that certain attributes are more intuitive than classes—namely, the attributes, properties, or qualities of sense experience, for example, those of color and sound. It is possible to maintain that these attributes are sometimes distinct even though possessed by the same objects, and still to maintain that the difficulty noted in the case of the matrices (26) and (27) does not arise, since (26) and (27) are not among the matrices to which the simple attributes of sense experience correspond. However, such a domain of special attributes, not corresponding to matrices in general, would not suffice for the purposes of mathematics, nor for the derivation of a general theory of classes.

The main conclusions reached in the five sections of this paper are as follows. A substantive word or phrase which designates an object may occur purely designatively in some contexts and not purely designatively in others. This second type of context, though no less "correct" than the first, is not subject to the law of substitutivity of identity nor to the laws of application and existential generalization. Moreover, no pronoun (or variable of quantification) within a context of this second type can refer back to an antecedent (or quantifier) prior to that context. This circumstance imposes serious restrictions, commonly unheeded, upon the significant use of modal operators, as well as challenging that philosophy of mathematics which assumes as basic a theory of attributes in a sense distinct from classes.

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A TECHNIQUE OF PROBLEM SOLUTION

THE technique of the solution of a problem transcends in importance detailed information of a field of knowledge. Problems related to imposed tasks yield to one of the three modes of solution: the experimental method, the method of models, and the analytic method.

The experimental method implies familiarity with similar systems. An extrapolation, within reasonable limits, of experiences

with similar systems results in a new and satisfactory pattern. Also, a different system will result upon a recombination of observations which have been made on other systems. Often the resulting system will be found wanting; then changes are effected and alterations are accomplished which will render an acceptable system. Acceptability is usually judged on the basis of an economic life, rather than infinite durability. Methods of judging acceptable performance usually employ the sense organs as instruments of mensuration, and these results may be augmented by the results of objective physical measurement.

In terms of objective mensuration, the performance of the actual system may be defined as the limit of the measured behavior,

(1) $(\text{Measured Behavior})_m \rightarrow$ Behavior of Actual System

where "m" represents successive experimental determinations, each utilizing more adequate instrumentation. Professional judgment tends to ameliorate the inequality expressed in equation (1).

The method of models utilizes a combination of the experimental and analytic modes. Models are constructed for which similarity of behavior with that of the prototype is assured. Similarity of the force fields in the model and the prototype is mandatory and is accomplished by the analytic methods described in later paragraphs. For such cases in which it is not possible to comply with the postulates describing complete similarity, results of model performance tests in which some of the force fields, but not all, obey the requirements of similarity, may be presented in a manner such that the prototype performance may be predicted by extrapolation. The upper limit of the model is obviously the prototype.

The analytic mode of approach to the solution of a problem also requires experimental experience. Familiarity with the behavior of actual systems is a prime requisite of the analyst. Idealization of the actual system is the first step toward the prediction of the performance of the system.[1] The term "ideal system" is used synonymously with the phrase "thought model";[2] it consists of the aspects of the actual system.[3] For instance, an ideal gaseous system[4] may be defined as a gas which obeys the law $Pv = RT$.

[1] Kallen, H. M., *The Philosophy of William James* (New York: The Modern Library), pp. 88, 162, 164, 206; Lewis, G. N., and Randall, M., *Thermodynamics* (New York: McGraw-Hill Book Co., 1923), pp. 63, 112, 221, 232; Lenzen, V. F., *Physical Theory* (New York: John Wiley & Sons, 1931), p. 15; Bridgman, P. W., *The Nature of Physical Theory* (Princeton, N. J.: Princeton University Press, 1936), pp. 59–61.

[2] Bosnjakovic, Fr., *Technische Thermodynamik*, Part I (Dresden: Steinkopff, 1935), p. 82.

[3] Lenzen, *op. cit.*

[4] Lewis and Randall, *op. cit.*

This system may also be defined dynamically as a gas consisting of solid, hard, perfectly elastic, spherical molecules capable of random motion of diameter small compared with the mean free path; that is, the system may be defined macroscopically or microscopically. Another illustration of the thought model is the freely falling body (mass m) which in the first idealization may be postulated as an inelastic body possessing one degree of freedom falling through space, which latter offers no resistance, under the action of a constant gravitational force (g). The system obeys the law $F = ma$, where a = acceleration of the body. A more precise prediction of the behavior will follow from a second idealization; in this ideal system the resistance to motion (R) will be postulated as a function of the velocity (v), $R = F(v)$, where $F(v)$ may be expressed as a power series. Otherwise the definition of the system will remain unchanged. Other idealizations, each including additional variables or force fields, may be accomplished if required. Several examples will be cited. The automobile may be idealized in the first instance as a flat plate of area equal to the frontal projected area of the body, of mass equal to that of the car, and powered by an engine which generates a constant torque-speed characteristic. The power is made available at the wheels through a 100 per cent. efficient transmission.

In order to illustrate the methods of the economist a quotation from Fairchild is presented:

> Let us exclude all foreign markets. . . . Let us imagine a perfectly capitalized self-contained society. There is just one owner. . . . There emerges what appears to be a general law. . . . In a fully capitalized society true profits must always be limited by the owner's capacity to consume.[5]

To return to the general discussion, the combination of elements of the ideal system obeys laws which are the formulations of the limit approached by the experimentally determined behavior of semi-isolated systems. A physical system may be visualized as being similar to a series of pulleys and levers [6] which are located in an upper room, to which entrance is barred. Ropes connecting the pulleys and levers extend into a lower room where they may be operated by an observer. The movement of one rope causes motion of others. The formulation of the behavior of the ropes with respect to the one manipulated (the independent variable) constitutes the fundamental law. Hypotheses with respect to the system in the upper room may be presented which will partially explain

[5] Fairchild, H. P., "The Fallacy of Profits," *Harpers*, February, 1932, pp. 271–282.

[6] This analogy is due to Jeans, we believe, although the exact reference can not be recalled.

the behavior of the ropes in the lower room, but these of necessity are not based on direct observation of the system in the upper room. For instance, $F \rightarrow mg$ as the resistance (R) approaches zero, expresses the law which describes the trajectory of an inelastic body falling vertically in the ideal system described above.

As implied in the previous paragraphs, other idealizations may be evolved beyond the first. The number of idealizations utilized is limited by the state of knowledge of the analyst, the state of knowledge of society, and the available (or economically justifiable) funds and time. In general the behavior of the actual system is the limit of the behavior of the ideal system (I_n) as the idealization is extended,

$$(2) \qquad \lim_{n \to \infty} I_n \rightarrow \text{Behavior of Actual System}$$

where n represents the number of the idealizations, each progressively including more variables and force fields (or at least more accurately describing their effect).

Thus the Behavior of the Actual System may be approached through either the experimental or analytical attack. This method of solution of problems is general (the temptation is to say universal), and is applied with success in the fields of economics, medicine, psychology, and many others. For instance, it may be said that the historical novelist idealizes the actual situation and characters. And as a final example, the medical expert may prescribe remedial measures for a particular human organ, fully aware that the interrelations of the organs do not entirely justify the idealization (isolation of the organ).

The idealization process is usually a process of analysis, and the solution of the ideal system is an experience in synthesis. Systems can be over-idealized, so that the solution of the ideal system will not adequately represent the behavior of the actual system. For instance, the idealization of an internal combustion engine crankshaft as a right circular cylinder transmitting the time average torque results in the prediction of ridiculously low stress. This technique was followed until the last decade, but the professional skill of the designer narrowed the gap between the ideal system behavior and that of the actual shaft. Modern technics includes the application of periodic torques at the proper locations on an ideal shaft which structurally closely resembles the actual shaft.

The analytical attack yields what deprecatingly, or still worse, apologetically, is often called the theoretical result, while the experimental (cut and try) yields the "practical" result. The philosophy of attack outlined above admits no such classification. The analytical result truly describes the behavior of the ideal system

(thought model) under consideration, provided the solution has resulted from logical processes and provided the postulates were adequate. No distinction will be made here between the processes of mathematics and of logic. The practical solution (it may be called the experimental solution, if the development was properly conducted) also yields the true result, provided this result complies with the requirements set by the responsible individuals. The analytical and experimental solutions will agree if the designer is competent, sufficient information is available in the literature, and if sufficient funds are spent on the analytical attack.

Ofttimes properties of substances and mixtures, as well as the laws of behavior of ideal systems (limiting behavior of similar actual systems, adequately isolated), are not available to the designer, due to the paucity of these data. In these cases, the ideal system behavior must be predicted using the best data available (or extrapolation of data). This impediment will limit the accuracy of the analytical prediction. In such cases the farsighted engineer will lean more heavily on the experimental method. The analyst deserves to have available more data on the physical properties and on system behavior if he is to cope adequately with the problems presented by modern society.

Finally, a powerful method of solution, that of analogy, will be mentioned. Analogous, idealized systems obey similar differential equations, and have similar initial and boundary conditions. In other words, a change of variables will transform the equations of one system to that of the analogous system. The force fields of the systems are therefore similar. Thus, in general, a particular ideal system does not possess a unique analogy. For instance, the thermal circuit consisting of resistance and capacitance elements is usually conceived as analogous to the electrical circuit containing elements bearing similar designations. For this analogy the rate of heat transfer (q) is equivalent to the rate of quantity of electricity transfer (current, i), the temperature (t) to the voltage (e), and the impedances of the two systems are computed in the same manner. However, a system in which the resistances are equivalent, but in which the thermal capacitance is equivalent to the electrical inductance, and for which the temperature and current are analogous, will serve equally well. A rational rejoinder will state that the first analogy is more natural. A strong plea is made for a broader, but strict, utilization of the concept of analogy. Analogous systems may be solved by experiment, or often their analytical solutions are available.

Although the term "analytical" as used here may appear to preclude the graphical technique, the writer hastens to add that

this was not the intention. The graphical techniques are often more powerful than the algebraic, allowing solutions for much more complex boundary conditions than those solutions at present available in algebraic form. However, the algebraic solution can usually be generalized, while the graphical can not, except by algebraic methods.

The judicious utilization of the analytic and experimental modes leads to economical and satisfactory answers of problems.

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BOOK REVIEW

Bradley's Dialectic. RALPH WITHINGTON CHURCH. Ithaca, N. Y.: Cornell Press. 1942. 188 pp. $2.50.

The purpose of this book is threefold: to give an exposition of Bradley's dialectic, to answer certain cavalier criticisms of it, and to point out the respect in which Bradley really was mistaken. It is a pity that very little space is given to the last part of the project, most of it being devoted to repetitious exposition. Not that Bradley's position necessarily calls for more criticism than it gets in these pages, but that the reader is left guessing as to the aim of the exposition itself until the very end. In short, His Majesty the Absolute (dubbed thus by F. C. S. Schiller) would have been better served by His Loyal Opposition, if the latter had made itself heard all along.

Professor Church correctly claims that the chapter on "relation and quality" in *Appearance and Reality* is the crux of Bradley's dialectic or "logic of contraries." The logic of contraries, rejecting the law of excluded middle and thereby the whole logic of *contradiction,* is designed to do greater justice to the dynamism of process and becoming. It rests on the conception of the internality of all relations allegedly disclosed by Bradley's analysis of relations and qualities. The procedure and results of this analysis are an old story. The qualitative is taken as the terminal, the "moment of immediacy"; whereas the relational is the differentiating *agent,* the "moment of mediation." (Professor Church seems in the main to agree with Bradley in his conception of any relation as a separating agency—that which actively separates anything out, and thus distinguishes it, from other things.) Thinking is identified with this "othering" relational process. Then, after

picturing a crystallization of the field of experience into fairly clear-cut terms and relations, Bradley notices that, for the terms to be "really" related, their relations can not fall wholly "between" (outside, external to) them, nor wholly in each of them (internal). A purely external relation or a purely internal one—neither of these could be a real connective for its terms. Bradley solves the problem by conceiving term and relation as fusing into, or ultimately being, one another, both as Predicate of Absolute Subject; thus is identity-in-difference secured, not as intelligible for finite intellect, but in a higher mode of experience—the Absolute. All relations fall, and are transfigured, *within* this Final Term, like Christians in the bosom of Abraham. Thus does internality gain supremacy over externality, and *in*clusiveness become the measure of degrees of reality. Professor Church appropriately calls the method of such reasoning "the relational dialectic of imagination" (p. 183), contrasting it with "the logic of contradictories."

But, though he associates the method with an imaginative procedure and in the Preface (p. 10) calls it "an almost hopelessly romantic way of imagination and evaluation," he dislikes the criticisms that are aimed at exposing its pictorial or essentially dramatic quality. When Ewing or Broad, for example, accuse Bradley of picturing a relation as a string (pp. 45, 163) tying its two terms together—Bradley's thinking never seems to get beyond dyadic relations, this itself being a consequence of his pictorial conceptions—Professor Church objects. But it is plain enough that *one* source of Bradley's paradoxes is his imagining a relation, say, between two cherries, as analogous to a toothpick. Obviously such a connective would not "join" its term if it "fell wholly between" them, i.e., if it did not become internal to them by actual penetration. From the side of the terms, too, it becomes obvious, to this *manière de penser,* that they must in some measure incorporate the relation. Else other relations are required between the original relation and terms, to achieve the connection. This generates the infinite regress. To offset this, Bradley pictures relation and terms as inhering in a more inclusive subject which "grounds" and supersedes the differences—ultimately the Absolute.

Another source of difficulty, which seems to bedevil Professor Chuch as much as it does Bradley, is the ambiguous notion that a relation is a differentiating agent—that which *produces* distinctions. This glosses over the fact that many relations are the *result* of separations which are not themselves relations in any sense. Consider the cell-fission example, Professor Church's favorite. At

first there is one cell, then, later, there are two, at a distance of, say, an inch from one another. Now Professor Church speaks as if what produced the fission or bifurcation is a relation, this being an activity or "moment of differentiation"—relations thus being conceived as differentiations productive of their terms. But the distance-relation (one inch) neither joins nor disjoins the cells *in the sense of holding them together or keeping them apart.* What does this is, among other things, a bio-chemical action. The relations, including others besides the merely spatial one of distance, are *results* of differentiations of various sorts. Bradley's and Professor Church's notion that relations "do" something to their terms (as an axe splits one chunk of wood into two) and the terms to their relations, and that it is the metaphysician's business to make the transaction intelligible—this notion is itself the creature of fanciful imagination, or picture-thinking. Should it be contended that Bradley's main reason for his dialectic of internality is not the above pictorial conception, but the demand for an adequate explanation of the continuity involved in change or process generally, the answer is that a nice language (mathematical) has been developed to enable the theorist to talk continuity without denaturing it—and without violating the Law of Contradiction.

The dialectician may still say: even granting relations as *results,* yet, in so far as they are between their terms at all, Bradley's problem remains unsolved. Just how does the distance-interval of one inch between the cells really relate them? The air of enigma is created by the metaphorical and lax use of "between" in the above expression. It is dispelled by translating the expression as follows: cell *A* is one inch from cell *B*. In this equivalent formulation, the concept of "between" does not even appear, yet it states a relational fact.

The best way to get at Bradley's weakness is in terms such as the above, not in the rather innocuous way in which Professor Church critically concludes his book. There he argues, perhaps truly, that the Absolute is not accessible enough within finite experience to provide a measure for degrees of truth and reality, and that one may choose freely between the logic of contradictories and the relational dialectic of the imagination, the relation between them being a sort of surd quantity, and the general relation of each to "experience" being indecisive. The value of the book is that it assists the reader to some teasing disagreements both with Bradley and with his proponent-critic, Professor Church.

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BOOK NOTES

Plato's Theology. FRIEDRICH SOLMSEN. (Cornell Studies in Classical Philology, Volume XXVII), Ithaca, N. Y.: Cornell University Press. 1942. ix + 201 pp. $2.50.

This study is an examination of the place of religion in Plato's metaphysics with particular emphasis on the theoretical relation of religion and the city-state. The originality of this investigation lies in the author's orientation of his material toward Plato's final discussion of the problem in Book X of the *Laws.* The result is a valuable contribution to the understanding of the place and significance of religion in Plato's thought.

The author has divided his work into three major sections: "The Background," a study of the rise, decline, and revival of Greek religion as seen in Greek literary sources; "A Variety of Approaches," an examination of the various ways in which Plato treated the problem of religion (other than the treatment of the *Laws*); "The Comprehensive Picture," a study of Book X of the *Laws.* There is also a final chapter on the influence of Plato on subsequent religious philosophers.

In an excellent chapter on "The Philosophy of Movement" the author shows how "soul" becomes supreme in the Platonic metaphysics of movement. In his later works, it is argued, Plato interprets the Ideas in terms of the dynamic character of "soul" rather than in terms of the static conception of "being." "The Sophist exhibits the theory of Ideas in a form in which they have outgrown their original stiffness and isolation and show themselves capable of entering into relation with one another, . . ." (p. 77). There is, according to the author, an equally important tendency in Plato's later thought to view nature itself as imbued with the characteristics of "soul." The original dichotomy between "being" and "becoming" gradually loses its preëminence in Plato's metaphysics. The "divine element" (or "soul") becomes one with nature in the *Laws:* "Nature now becomes alive—truly alive as something more and better than a shadow or copy" (p. 91). The doctrine of the "world-soul" occupies an important place in this interpretation of Plato's metaphysics.

The elaboration of this argument becomes the metaphysical basis for the author's discussion of Plato's final attempt to view religion as an integral part of the city-state. Law itself is one of the manifestations of soul in the universe. "We can now understand why, when embarking on the discussion of theology, Plato felt that he was coming to the support of Law. 'Who helps the gods help the laws' would have been true in the old city-state, and

is again true, though in a different sense, in Plato's new State" (p. 164).

The argument of the book is carefully developed. The author is too concerned, perhaps, with the difficulties attendant on any systematization of Plato's ideas. Occasionally his discussion seems to suffer from this preoccupation. For instance, after a convincing exposition of the metaphysical basis of Plato's interpretation of man and his relation to God, the author remarks, "Still we have no right to say, even of the aged Plato, that this cosmic background was indispensable to his thought on either man or the State" (p. 168). It is difficult to understand such reservations as indicating anything of importance for the discussion if the thesis of the book is correct.

The work takes advantage of the wide range of important bibliography relevant to the topic. The foot-notes are helpful, though their brevity is often to be regretted. This limitation, as well as certain others, is inevitable in a work on such a large topic confined to so few pages.

J. G.

An Introduction to Francesco Patrizi's Nova de Universis Philosophia. BENJAMIN BRICKMAN. New York: Privately printed (Columbia University Ph.D. dissertation). 1941. 82 pp.

Patrizi, nature philosopher of the Renaissance, might have known in advance that his combination of Platonism, or Neo-Platonism, and cosmic speculation would not find favor with the Church. And yet he did get a hearing, before he landed on the Index, though the hold of Aristotle was still unshaken, and like Descartes he could not get the Jesuits to take up the advocacy of the new philosophy. In reading his bolder speculations one is reminded of some modern examples of theorizing about the cosmos, based indeed on greater factual knowledge, but none too much even yet, such as Milne and Eddington. His metaphysical treatment of light suggests Woodbridge's interest in the same topic. Altogether he is rather attractive, now that we are far enough away not to be bothered by his conceit and contentiousness.

So this little study of Patrizi adds another block to the mosaic of our picture of the Renaissance, and gives us some material not before so available in English. A bit dull in its early parts, except for the biographical details, it becomes more interesting in the review of Patrizi's speculations about the cosmos (*Pancosmia*), and in the critical analysis of Patrizi that follows. The bibliography seems pretty good.

H. T. C.

The Unfinished Task: Economic Reconstruction for Democracy. LEWIS COREY. New York: The Viking Press, Inc. 1942. xiii + 314 pp. $3.00.

Mr. Corey's approach, incisive and practical in the best sense of the word, exposes many an antiquated category in politico-economic thinking of the present. On the positive side, history and empirical data convince him that failure to separate economic and political power is the essential danger to democracy. Centralized control of *whatever* character or honorific label inevitably breeds bureaucratic tyranny. The retention of capitalism with significant modifications he regards as the most promising path for the future. It must take the form of a "constitutional economic order" based on a principle of economic checks and balances. The managerial class, having emerged as functionally more representative of industry than the owner-capitalists, takes its place with government and unionism in a tripartite balanced interplay of forces. Monopolies become democratically transformed into public corporations. Public corporations, independent business enterprise, free farmers, consumer and producer co-operatives, free labor unions, and a limited political mechanism must all retain their identity if free political action and civil rights are to survive and grow. Mr. Corey's empirical sanity and command of realistic detail merit careful attention for his conclusions.

J. B.

OTHER NEW BOOKS AND JOURNALS

ETHICS. Volume LIII, Number 2. The Definition of the General Will: *J. A. Clark.* The Three Types of Law: *Georg Schwarzenberger.* A Systematic Presentation of Peirce's Ethics: *James Feibleman.* Discussions—Keeping the Peace: *Quincy Wright.* Human Equality: *George Morgan, Jr.* The Ethics of Democracy: A Rational Justification: *George Gentry.* Temperament and Moral Theory: *A. W. Levi.* The Knowledge of Good and Evil: *Dorothy Walsh.* Ideology of Success and the Dilemma of Education: *Gustav Ichheiset.*

MIND. Vol. LII, No. 205. Some Recent Criticisms of Spinoza (IV): *H. F. Hallett.* The Logic of Question and Answer: *A. D. Ritchie.* Discussions—Disinterested Desires: *J. C. Maxwell.* Are Contradictions Embracing? *K. R. Popper.* Professor Aaron on Intuition: *A. C. Ewing.*

PHILOSOPHY OF SCIENCE. Volume 10, Number 1. Cosmic Attributes: *J. E. Boodin.* The Essential Problem of Empiricism:

A. C. Benjamin. Behavior, Purpose and Teleology: *Arturo Rosenblueth, Norbert Wiener, Julian Bigelow.* Creative Imagination and Indeterminism: *William Seifriz.* Physics and Idealism: *P. C. Jones.* G. H. Mead's Conception of "Present": *D. L. Miller.* The Intelligibility of Whitehead's Philosophy: *A. H. Johnson.*

THE MODERN SCHOOLMAN. Vol. XX, No. 2. Function of Government in Industry: *Wilfrid Parsons.* Interracial Justice as a Principle of Order: *John LaFarge.* Luther and Free Choice: *Gerard Smith.* A Study of Genus in the Philosophy of St. Thomas Aquinas: *W. A. Van Roo.*

FILOSOFIA Y LETRAS. No. 8. El ser y el tiempo (Introducción): *Martin Heidegger.* Filosofía contemporánea en Norteamérica: *E. S. Brightman.* Galileo a los tres siglos (I): *José Gaos.*

REVIEW OF PHILOSOPHY AND RELIGION. Volume Eleven, Number Four. The Aryan View of Life: *M. H. Syed.* W. Stern and Philosophy of Organism: *K. C. Vardachari.* Living: *Bertram Keightley.* Indian and Western Idealism: *S. K. Saksena.* Some Musings on Tapas: *A. B. Brewster.*

THE NEW SCHOLASTICISM. Vol. XVII, No. 1. Truth is in the Judgment: *G. B. O'Toole.* Plotinus' Theory of Empirical Responsibility: *G. H. Clark.* The Rôle of Monistic Idealism in Croce's Esthetic: *James Collins.*

We have received the following reprints:

"The True Tragedy. On the Relationship between Greek and Tragedy and Plato" by Helmut Kuhn, from *Harvard Studies in Classical Philology,* Vol. LII (1941), and Vol. LIII (1942).

"The Crisis in Civilization" by Marten ten Hoor, from *Association of American Colleges Bulletin,* Vol. XXVIII (1942), pp. 374–387.

"The Minor Transcendentalists and German Philosophy" by René Wellek, from *The New England Quarterly,* Vol. XV (1942), pp. 652–680.

"The Quest for Certainty in Saadia's Philosophy" by Abraham Herschel, from *The Jewish Quarterly Review,* new series, Vol. XXXIII (1942), pp. 265–313.

"The Nordic Blood Myth" by M. C. Otto, from *The Antioch Review,* Winter, 1942, pp. 558–570.

"The Versatile James" by Edgar Sheffield Brightman, from *Religion in Life,* Winter 1942–1943 issue.

"The Concept of a Creative Principle in the Poems of Collins and Gray" by Leone Vivante, from *Comparative Literature Studies,* Second Year, Volume 8.

NOTES AND NEWS

To the Editors of the Journal of Philosophy:

Like many a man who has had a tough struggle in acquiring wisdom, I hate to see young people starting off wrong. So, to a young distant relative of mine in his last year in the university I said, "I hope you have taken up philosophy." He replied that he had thought of doing so but had consulted his college adviser. The latter advised him that philosophy was "a swamp of abstractions" and that once one got into the middle, it became a hopeless struggle unless one thought of taking it up as a profession.

In a way, then, I have been fortunate to have taken up the pursuit of truth outside the university; for I seem to have something you college men do not have. For instance, I have just finished trying to get some sense out of that essay of William James's, "Energies of Ideas." It is one of the plainest examples of a mind lost in a swamp of mental groping. I used to be almost confounded in reading the works of theologians trying to make sense out of them. By *sense* I mean practical sense, not grammatical sense or logical sense or non-sense. Of course, the solution to the confusion of the apparently wise but prolix theologians eventually came to me. I know simply the perception that all their profound humbug was a tissue of logical inference based upon the assumptions that a myth was not a myth.

There used to be a contemporary philosopher at Harvard when James was there. I think his name was Josiah Royce. Around Boston he had a great following. That man had me going around in circles for years. Then once more I had found the pragmatic test. Royce was an idealist. What is an idealist? An idealist is simply a perfectionist—an impossible fellow looking through the wrong side of the microscope. Bergson was another voluble, polysyllabic phraseologist who could spin out abstract ideas into larger books that left a reader floating between heaven and earth and made him feel like a fool. Is not this professional obsession with abstract ideas one of the follies of mankind unnoticed by Erasmus? Why do not professional philosophers apply the scientific method? An abstract idea is identical with theory; purely *a priori*. The scientist does not go on for ever dwelling upon his theory. When he has a good theory, like Clark Maxwell's theory that electric current might be made to travel or carry without a metallic conductor, the scientist goes to work and gives it the test of reality for a pragmatic result. He does not go on lecturing and writing books about his theory for ever, as theologians do.

If Denison Maurice Allan had just put his head outside his squirrel cage of abstractions and looked at the objective world of men about him who possess ideas from the time as children they took their tests until their last breath, he could never have asked such a silly question as "Are Ideas Physical?"[1] Goodness only knows how much time he took to write his thesis, but the only physical result he got was a printing in your Journal and an addition to the witch's brew of professional abstractions.

The mind is the result of the physical functions of the gray-matter within the skull. The neurological, physical activities of the brain-matter can never be discovered by a philosopher pounding a typewriter. Such a discovery must come from the work of the scientific neurologist's investigations in the laboratory. What we call the *mind* is the play of ideas. Ideas are the conscious but intangible tools of the physically functioning brain. I see no confusion there any more than asserting that electricity is a property of copper wire.

[1] This Journal, Vol. XXXIX (1942), pp. 645–654.

The fact that an idea is not physical is obviously true by the evidence of the inability of most philosophers to comprehend realities. This is our big problem. Most people, like children, can grasp, as it were, the impossibly fantastic, common illusions and resent the truths of the empirical world about them. The confidence-man, the theologian, and the politician are real people who produce ideas of unreality, but pleasing to the subjective nature of mankind. Mankind loves humbug and nonsense. Ideas in themselves are intangible things aside from their weight, as it were, in the scale of the human emotions. A million times a day ideas produce mechanical emotional reactions that are more or less controlled and weighed by will-power in humans. These rational humans notice or feel the emotional reactions which range from the horrible to the sublime. Horrible emotions are sickening and can be endured only by the *trained*, so most people are not at all rational, since they weakly choose the ideas emotionally easiest to bear. There is a mechanism to ideas which is emotional or psychological, not physical.

JAMES NEILD.

HIGHLAND PARK, ILLINOIS.

Professor William Pepperell Montague, of Columbia University, is spending the spring semester 1943 at the University of California at Los Angeles, as the first occupant of the new Flint Visiting Professorship at that university.

Professor George E. Moore is at Swarthmore College for the spring semester of 1943 where he is Senior Consultant in the Department of Philosophy.

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